

Asteroid Primer Questions Answers (For Leaders)

Take notes on these topics from Tyler's talk (slide presentation)

1. *What is the definition of an asteroid?*

Asteroids are rocky, airless worlds that orbit our Sun, but are too small to be called planets. They are sometimes called minor planets, and are rocky remnants left over from the early formation of our solar system about 4.6 billion years ago

2. *What general shape are asteroids? Why?*

Most asteroids are irregularly shaped, though a few are nearly spherical, and they are often pitted or cratered. Think of a baking potato.

3. *What is the current understanding of their origin?*

Asteroids are thought to be primordial material prevented by Jupiter's strong gravity from accreting into a planet-sized body when the solar system was born 4.6 billion years ago. It is estimated that the total mass of all asteroids would comprise a body approximately 930 miles (1,500 kilometers) in diameter -- less than half the size of the Moon.

4. *What is their movement in the solar system?*

The asteroids orbit the sun.

This animation is from the Jet Propulsion Laboratory of NASA:

[Animation of Asteroids in Solar system](#)

5. *In Section 1, you made a small coding script to determine the classification of a few asteroids. Now define them:*

A Near Earth Asteroid (NEA):

Asteroids with orbits that bring them within 1.3 AU (121 million miles/195 million kilometers) of the Sun are known as Earth-approaching or near-Earth asteroids (NEAs). It is believed that most NEAs are fragments jared from the main belt by a combination of asteroid collisions and the gravitational influence of Jupiter. Some NEAs may be the nuclei of dead, short-period comets. The NEA population appears to be representative of most or all asteroid types found in the main belt.

Main Belt asteroid

Tens of thousands of asteroids congregate in the so-called main asteroid belt: a vast, doughnut-shaped ring located between the orbits of Mars and Jupiter from approximately 2 to 4 AU (186 million to 370 million miles/300 million to 600 million kilometers).

Random notes: One out of ten asteroids in the Main Belt are binary, but one out three asteroids in the NEAS group are binaries.

Mars crosser

Asteroids which cross Mars' orbit but do not quite reach the orbit of Earth

6. *Compare and contrast the difference between orbital revolution and self rotation (spinning).*

Orbital Revolution - rotates around an external axis - the sun

Self Rotation - rotates around an internal axis. Most asteroids spin on their short axis, a uniform motion requiring the least amount of energy.

7. *Why do asteroids spin?*

The solar system formed from a rotating cloud of gas and dust. This initial rotation plus the many collisions suffered since the formation contribute to the general spin of asteroids.

8. *Why are we able to detect some asteroids?*

Asteroids do not produce their own visible light, therefore, sunlight needs to reflect off the surface and be directed to the observer.

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